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## Abstract

This research examined the impact of a basic biological process—namely, sleep—on relationship conflict, specifically testing whether poor sleep influences the degree, nature, and resolution of conflict. In Study 1, a 14-day daily experience study, participants reported more conflict in their romantic relationships following poor nights of sleep. In Study 2, we brought couples into the laboratory to assess the dyadic effects of sleep on the nature and resolution of conflict. One partner's poor sleep was associated with a lower ratio of positive to negative affect (self-reported and observed), as well as decreased empathic accuracy for both partners during a conflict conversation. Conflict resolution occurred most when both partners were well rested. Effects were not explained by stress, anxiety, depression, lack of relationship satisfaction, or by partners being the source of poor sleep. Overall, these findings highlight a key factor that may breed conflict, thereby putting relationships at risk.

## Keywords

interpersonal conflict, sleep, close relationships, empathic accuracy, affect

Relationships characterized by conflict are of poorer quality, do not last long, and are associated with worse health outcomes relative to low-conflict relationships (e.g., Gill, Christensen, & Fincham, 1999; Gottman & Notarius, 2002; Kiecolt-Glaser & Newton, 2001). Thus, it is critical to uncover factors that fuel conflict. Bringing the sleep literature to bear on social psychological work on relationships, we examined whether sleep, a basic biological process, influences the degree, nature, and resolution of relationship conflict.

## *A Link Between Sleep and Relationship Conflict?*

People suffering from poor sleep experience a host of affective and cognitive impairments that are likely to breed conflict. Sleep loss leads to amplified responses to negative emotional stimuli (Yoo, Gujar, Hu, Jolesz, & Walker, 2007) as well as greater negative affect, such as increased anger (e.g., Selvi, Gulec, Agargun, & Besiroglu, 2007; Zohar, Tzischinsky, Epstein, & Lavie, 2005), and decreased positive affect (Acheson, Richards, & de Wit, 2007). Thus, poorly rested individuals may be prone to react negatively to problems in their relationships more frequently and more severely than if they were better rested. Sleep loss is also associated with reduced empathy and emotional recognition (Killgore et al., 2008; van der Helm, Gujar, & Walker, 2010); thus, poor sleep may thwart understanding between relationship partners, creating more opportunity for conflict. In addition, reduced empathy and empathic accuracy are associated with greater miscommunication and enhanced willingness to retaliate during conflict

(Bissonette, Rusbult, & Kilpatrick, 1997; Fruzzetti & Iverson, 2006), suggesting that poor sleep may lead to more damaging conflict. Moreover, just one night of sleep loss impairs problem solving (Harrison & Horne, 2000; Linde & Bergström, 1992), a skill important for achieving conflict resolution. Drawing upon this literature, we hypothesized that poor sleep would influence the degree, nature, and resolution of conflict, such that poor sleepers would experience a greater degree of conflict in their relationships, and their conflicts would be characterized by greater negative affect, reduced positive affect and empathic accuracy, and less conflict resolution relative to their better rested counterparts.

Two existing studies provide preliminary evidence consistent with the hypothesized link between poor sleep and relationship conflict. In one study of 69 couples, couples receiving treatment for sleep disorders reported fewer disagreements each week relative to no-treatment couples (McFayden, Espie, McArdle, Douglas, & Engleman, 2001). In another study of 29 couples, worse sleep efficiency one night was associated with more negative interactions with partners the following day, although this finding held only for men (Hasler & Troxel, 2010). The current research advances this initial

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work in several ways. First, we examined whether poor sleep is associated with more severe relationship conflict in everyday life, more destructive conflict, and less conflict resolution. This multifaceted approach allowed us to illuminate specific paths through which poor sleep influences relationship conflict. Second, we examined the interdependence between relationship partners, considering not only how one partner's sleep influences his or her own experiences of relationship conflict but also his or her partner's reactions to conflict (see Hasler & Troxel, 2010, for similar methods). We also examined whether the effect of one partner's sleep on conflict depends on how well the other partner has slept (i.e., the interactive effects between partners), paving the way for a more complex and nuanced understanding of the ways in which sleep can impact relationship conflict.

### *Extending the Literature on Sleep and Relationships*

In addition to highlighting a potential factor fueling harmful relationship conflict, the present studies extend the literature on sleep and relationships more generally. Research shows that one partner's sleep problems can influence relationship quality for both partners (e.g., Cartwright & Knight, 1987; Hasler & Troxel, 2010; Strawbridge, Shema, & Roberts, 2004; Troxel, Buysse, Hall, & Matthews, 2009). For example, in a study of long-term married couples, one spouse's poor sleep over the previous month was associated with lower marital satisfaction for both partners (Strawbridge et al., 2004). Though informative, this small body of research on sleep and relationships has several limitations. Most research has focused on the impact of sleep disorders, and the results have been equivocal, with some studies finding no link between sleep problems and relationship quality (e.g., Scott, Ah-See, Richardson, & Wilson, 2003; for a review, see Troxel, Robles, Hall, & Buysse, 2007). In addition, the studies have often relied on small samples and, with just a few exceptions (Hasler & Troxel, 2010; Strawbridge et al., 2004), have not examined the unique impact of each relationship partner's sleep on relationship functioning, despite the interdependence between partners.

The current research advances this broader literature on sleep and relationships by moving beyond global measures of relationship quality to explore the influence of sleep on specific relationship processes that occur during conflict, such as empathic accuracy. This research is also the first, to our knowledge, to examine how sleep influences relationship dynamics during ongoing interactions between relationship partners. In addition, we attempted to continue filling important methodological gaps in the literature (Troxel, 2010; Troxel et al., 2007) by examining subjective sleep quality rather than focusing on severe sleep problems, and using larger samples, multiple methods, and considering the interdependence between partners.

### *Overview of the Present Research*

Across two studies, we examined the link between poor sleep and relationship conflict. We operationalized sleep as

subjective sleep quality which captures multiple aspects of sleep, including duration, quality, and daytime dysfunction. We focused on subjective sleep quality because it is associated with global relationship quality (Strawbridge et al., 2004; Troxel et al., 2009) and strongly predicts psychological outcomes (e.g., Pilcher, Ginter, & Sadowsky, 1997; Pilcher & Ott, 1998).

In Study 1, we collected daily reports of sleep and conflict in romantic relationships for 2 weeks to examine whether one night's poor sleep was associated with a greater degree of conflict the following day. In Study 2, we brought couples into the laboratory to test whether poor sleep influenced self-reported and observed affect, empathic accuracy, and resolution during a conflict conversation. To examine the interdependence between partners, we used the actor-partner interdependence model (APIM; Kenny, Kashy, & Cook, 2006), testing whether one partner's sleep influenced both partners' responses during the conflict conversation as well as interactive effects between partners' sleep, such as whether conflict resolution is particularly unlikely if both partners slept poorly.

Factors such as depression, stress, anxiety, and relationship quality have been linked to both sleep and relationship conflict (e.g., Hall et al., 2000; Taylor, Lichstein, Heith Durrence, Reidel, & Bush, 2005); thus, we gathered measures to rule out the possibility that the link between sleep and conflict is explained by associations with these other factors. In addition, couples often share a bed, which that may be a source of poor sleep and conflict in the relationship, another plausible alternative explanation that we attempted to rule out in the current research.

## **Study 1: Sleep and Conflict in Everyday Life**

In our first study, we sought to establish a link between sleep and degree of conflict in everyday life. This daily experience methodology allowed us to explore both between-person and within-person variations in sleep. We were particularly interested in whether people would report more conflict in their relationships when they slept worse than was typical for them. We also collected daily reports of stress, anxiety, depressive mood, and relationship satisfaction, as well as assessing whether the partner was a source of sleep disturbance.

## **Method**

### *Participants and Procedure*

Seventy-eight (65 female) individuals in romantic relationships participated for course credit. On average, participants were 21 years old (range = 18–32) and had been in their relationship for 20 months (range = 1–151). For 2 weeks, participants were instructed to keep a paper sleep diary by their bed and complete it each night and morning. They also completed an online diary each night before they went to sleep. Participants were instructed to transfer the information from their sleep diary into the online diary in addition to answering questions about their experiences that day. Participants were e-mailed reminders between 8 p.m. and 10 p.m. each night. Three participants

**Table 1.** Study 1 Average Within-Day and Within-Person Means, SDs, and Ranges Across 14 Days.

	Within-Day	Within-Person	Actual Range
	M (SD)	M (SD)	(Possible Range)
Poor sleep	3.87 (1.88)	3.82 (1.62)	0–14 (0–15)
Conflict	1.49 (0.92)	1.48 (0.62)	1–5 (1–5)
Controls			
Anxious	2.18 (1.18)	2.17 (0.74)	1–5 (1–5)
Depressed	1.66 (0.96)	1.63 (0.62)	1–4 (1–5)
Stressed	2.67 (1.27)	2.62 (0.93)	1–5 (1–5)
Satisfaction	3.95 (1.05)	3.96 (0.72)	1–5 (1–5)
Partner disturbance	1.29 (0.74)	1.28 (0.45)	1–5 (1–5)

completed only one diary and were excluded from analyses. The remaining participants completed 908 diaries, an average of 12.1 days per person.

### Daily Measures

Diary measures were kept brief to maximize participation (Reis & Gable, 2000). *Sleep* was assessed with a sleep diary that included items tapping latency, duration, number of awakenings, quality (e.g., When I woke up for the day I felt . . . “Refreshed” to “Fatigued”), and daytime dysfunction (How tired were you today?). Based on the Pittsburgh Sleep Quality Index scoring guidelines (PSQI; Buysse, Reynolds, Monk, Berman, & Kupfer, 1989), scores for each component were recoded to range from 0 (*better*) to 3 (*worse*), and summed to create a sleep composite (possible range = 0–15). *Conflict* was assessed with the item “Did you and your partner experience conflict in your relationship today?” (1 = *we did not experience any conflict today*, 5 = *we experienced a lot of conflict today*). Using 5-point scales, we also assessed how much participants felt “*Stressed*,” “*Anxious*,” and “*Depressed*” each day, as well as their *Relationship Satisfaction* (today my relationship was . . . “*Terrible*” to “*Terrific*”), and their perceptions that their *partner had disturbed their sleep* the previous night.

### Results

The data consisted of up to 14 data points nested within each individual, requiring the use of a two-level hierarchical linear model (HLMwin; Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2004). We conducted lagged-day analyses, regressing previous night’s sleep onto conflict that day while controlling for conflict the previous day. This approach allowed us to rule out the possibility that an effect was due to greater conflict the previous day, which has been shown in previous research (Brisette & Cohen, 2002; Hicks & Diamond, 2011).

See Table 1 for descriptive statistics. As hypothesized, participants reported more conflict on days following a relatively poor night of sleep,  $B = .05$ ,  $t(634) = 2.67$ ,  $p < .01$ , controlling for conflict the previous day. This effect was a function of both

between-person variation in average sleep across the 14 days and within-person variation in sleep around a participant’s own mean. That is, people who slept worse on average across the 2-week diary reported more conflict in daily life relative to people who slept better,  $B = .13$ ,  $t(65) = 2.39$ ,  $p = .02$ . But within-person variation mattered as well—when participants slept worse than they usually did, they reported marginally significantly more conflict the following day,  $B = .04$ ,  $t(66) = 1.92$ ,  $p < .06$ , relative to days when they slept better than usual. There was no interaction between within- and between-person sleep,  $B < |.01|$ ,  $t < 1$ , suggesting that getting more or less sleep than one is used to influences conflict for both good and poor sleepers. Gender did not moderate the sleep–conflict association,  $B = -.02$ ,  $t < 1$ .

By conducting lagged-day analyses, we were able to rule out the possibility that our effects were driven by heightened conflict the previous day. Participants could also have been experiencing poorer sleep and greater conflict because they were more stressed, anxious, or depressed (e.g., Hall et al., 2000; Taylor et al., 2005). Indeed, on days when participants reported more of these emotions, they also reported worse sleep that night,  $B_s > .16$ ,  $ps < .03$ . However, when we controlled for each of these emotions, poor sleep continued to predict greater conflict,  $B_s = .05$ ,  $ps < .02$ . The sleep–conflict link also held when controlling for relationship satisfaction the previous day,  $B = .05$ ,  $t(66) = 2.54$ ,  $p < .02$ , suggesting it is not simply a manifestation of an unhappy relationship. Finally, on nights when participants had worse sleep, they were more likely to report that their partner had been a source of disturbance during the night,  $B = .38$ ,  $t(67) = 4.06$ ,  $p < .001$ . However, when controlling for partner disturbance, poor sleep continued to predict conflict the following day,  $B = .38$ ,  $t(67) = 4.06$ ,  $p < .001$ . In sum, people experience more conflict in their relationships after a poor night of sleep, and this is not due to people experiencing more conflict, stress, anxiety, depression, or relationship dissatisfaction the previous day, or blaming their partners for their poor night of sleep.

### Study 2: Sleep and Conflict in the Laboratory

In our second study, we examined whether poor sleep influences the nature and resolution of conflict. Couples came into the laboratory to take part in a videotaped conversation about a source of conflict in their relationship. We focused in particular on affect and empathic accuracy during the conflict conversation. In terms of affect, research has linked sleep to enhanced negative affect and reduced positive affect (e.g., Acheson et al., 2007; Selvi et al., 2007), and researchers have compellingly shown that a lower ratio of positive to negative emotions during conflict foreshadows later relationship dysfunction, including divorce (e.g., Gottman, 1994). Accordingly, we gathered both self-report and observational measures of affect throughout the conflict conversation and used these measures to create indices of the ratio of positive to negative affect experienced by each member of the couple. In terms of empathic accuracy, we focused on the extent to which participants were

**Table 2.** Study 2 Within-Person and Cross-Partner Correlations, Means, SDs, and Ranges.

	1	2	3	4	5	6	7	<i>M</i>	<i>SD</i>	<i>Range</i>
1. Poor sleep	0.16	−0.20	−0.17	0.28*	−0.14	0.06	0.13	3.06	1.62	0.00–9
2. Self-reported affect ratio	−0.19	0.30*	0.40**	−0.57***	0.31*	0.22 <sup>†</sup>	−0.12	2.73	1.20	0.50–5
3. Observed affect ratio	−0.15	0.46***	0.72***	−0.30*	0.26*	0.16	−0.09	2.13	1.40	0.18–6
4. Empathic accuracy	0.22 <sup>†</sup>	−0.46***	−0.28*	0.64***	−0.35**	−0.14	0.23 <sup>†</sup>	0.80	0.41	0.00–2
5. Conflict resolution	−0.07	0.41***	0.30*	−0.36**	0.55***	0.25*	−0.13	3.31	1.01	1.00–5
6. Background satisfaction	−0.13	0.31*	0.26*	−0.05	0.25*	0.32***	−0.24*	5.08	0.72	1.75–6
7. Depressive symptoms	0.08	−0.41***	−0.15	0.02	−0.19	−0.36**	0.17	11.74	7.88	0.00–45

Note. Cross-partner correlations are on and above the diagonal in the correlation table and within-person correlations are below the diagonal. Standard error was corrected to  $N =$  number of dyads.

<sup>†</sup> $p < .10$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

able to accurately identify the degree to which their partners experienced a variety of different emotions since conflicts characterized by low empathic accuracy may be more damaging for relationships (Bissonette et al., 1997). We also assessed each partner's perceived resolution of the conflict after the conversation ended.

Bringing both members of the couple into the laboratory allowed us to assess the dyadic effects of poor sleep—that is, the effect of one partner's sleep on the other partner's negative affect, empathic accuracy, and perceived conflict resolution. Finally, as in Study 1, we gathered additional measures (depressive symptoms and relationship satisfaction) to rule out plausible alternative explanations.

## Method

### Participants and Procedure

As part of a larger study, 71 heterosexual couples from the community participated for \$10 or course credit, and the opportunity to win \$75.<sup>1</sup> Two were excluded from analyses for failing to comply with instructions. On average, participants were 22 years old (range = 18–56) and had been in their relationship for 21 months (range = 1–87). When couples came into the laboratory, partners independently completed sleep measures. For the conflict conversation, partners listed the top three sources of conflict in their relationship, after which one partner was randomly selected to choose one to discuss with his or her partner. Couples were given 5 min to work toward a resolution while videotaped. Afterward, partners reported independently on their own and their partners' emotions during the conversation, as well as whether they had reached a resolution.

### Measures

*Sleep* was measured with 3 items assessing the previous night's sleep duration, sleep quality, and current daytime dysfunction (feelings of tiredness). Scores for each component could range from 0 (*better*) to 3 (*worse*) and were summed to create a sleep composite, with a possible range of 0–9. In a pilot study, this 3-item scale was strongly correlated with the PSQI ( $r = .65$ ,  $p < .001$ ), a widely used measure of subjective sleep quality (Buysse et al., 1989). We measured *positive affect* with 5 items

(i.e., appreciated, appreciative, cared for, caring, and confident;  $\alpha = .85$ ) and *negative affect* with 5 items (i.e., angry, ashamed, resentful, defensive, and rejected;  $\alpha = .77$ ). To measure *empathic accuracy*, we assessed mean-level bias (see Fletcher & Kerr, 2010) by taking the absolute value of the difference between participants' ratings of how much they thought their partners had experienced each of these 10 different emotions during the conflict conversation and their partners' self-reports of that emotion. We averaged the 10 difference scores ( $\alpha = .64$ ), with higher scores representing greater empathic inaccuracy. Participants also completed measures of *relationship satisfaction* (Funk & Rogge, 2007;  $\alpha = .89$ ) and *depressive symptoms* (Radloff, 1977;  $\alpha = .87$ ) prior to their laboratory session. Finally, three independent coders watched the conflict conversations and answered the questions “How positive (negative) was s/he throughout the conversation?” for each partner on 7-point Likert-type scales (1 = *not at all* to 7 = *very much*). The coders were reliable (interclass correlations = .94). We divided positive affect by negative affect to create a ratio of positive to negative emotions.

## Results

We conducted multilevel analyses with mixed models in Predictive Analytics SoftWare 18.0 to control for nonindependence between partners. We used APIM to simultaneously estimate the effect that one's own independent variable has on one's own dependent variable (actor effect), and the effect that one's own independent variable has on the *partner's* dependent variable (partner effect). For example, an actor effect for empathic accuracy would assess whether poorly rested participants experienced reduced empathic accuracy relative to participants who were better rested, controlling for the partner's sleep. A partner effect for empathic accuracy would assess whether partners of poorly rested participants experienced reduced empathic accuracy relative to partners of participants who were better rested, controlling for the partner's own sleep. We also tested for interactions between actor and partner sleep to see if, for example, the effects of sleep were compounded when both partners had slept poorly the previous night.

Descriptive statistics and zero-order correlations are displayed in Table 2.

## Affect

The worse participants had slept the previous night, the lower their ratio of positive to negative affect during the conflict conversation,  $B = -.21$ ,  $t(119) = 2.05$ ,  $p < .05$ . This effect was corroborated by the coders; participants who had slept poorly the previous night were observed as having a marginally lower ratio of positive to negative emotions,  $B = -.21$ ,  $t(87) = 1.80$ ,  $p < .08$ , relative to their better rested counterparts. Turning to partner effects, the consequences of poor sleep appeared to extend to the partners of participants who had slept poorly. Controlling for the partner's own sleep, the worse participants reported sleeping the previous night, the lower their partners' ratio of positive to negative affect during the conflict conversation, both self-reported,  $B = -.20$ ,  $t(125) = 1.87$ ,  $p < .07$ , and observed,  $B = -.24$ ,  $t(89) = 2.00$ ,  $p < .05$ .<sup>2</sup>

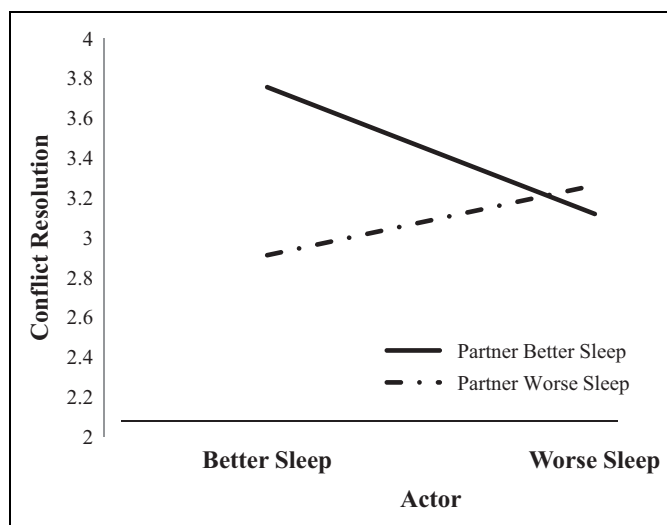
## Empathic Accuracy

Poor sleep also influenced people's empathic accuracy during the conflict conversation. The worse participants slept the previous night, the lower their empathic accuracy,  $B = .09$ ,  $t(98) = 2.52$ ,  $p < .02$ . Once again, one partner's sleep influenced both partners' experiences during conflict—when participants slept poorly, their partners were less able to accurately assess their emotions,  $B = .11$ ,  $t(97) = 3.31$ ,  $p < .002$ . Thus, the negative impact of poor sleep on empathic accuracy appears to be twofold: When people sleep poorly, they are less able to gauge their partners' feelings and their partners are less able to gauge their emotions.

## Conflict Resolution

In terms of conflict resolution, the analysis yielded a significant interaction between actor and partner sleep, actor  $B = -.07$ ,  $t < 1$ ; partner  $B = -.17$ ,  $t(100) = 2.13$ ,  $p < .05$ ; interaction  $B = .25$ ,  $t(64) = 2.67$ ,  $p = .01$ . As shown in Figure 1, participants reported being most successful at resolving conflict when both partners were well rested. Put another way, having just one partner who slept poorly was enough to hinder conflict resolution.

These results largely held when controlling for depressive symptoms and relationship satisfaction. When controlling for both partners' depressive symptoms, the following effects dropped below marginal levels of significance (i.e.,  $p < .10$ ): the effect of partner sleep on self-reported affect ( $B = -.13$ ,  $p < .19$ ) and the effect of actor sleep on observed affect ( $B = -.19$ ,  $p < .12$ ). When controlling for both partners' relationship satisfaction, the following effects dropped below marginal significance: the effect of actor sleep on self-reported affect ( $B = -.15$ ,  $p < .13$ ) as well as observed affect ( $B = -.16$ ,  $p < .19$ ).<sup>3</sup> The reported effects for empathic accuracy and conflict resolution remained significant across all analyses ( $ps < .05$ ). Regarding gender, there was a significant interaction between gender and partner sleep predicting self-reported affect,  $B = .42$ ,  $t(107) = 1.96$ ,  $p < .06$ , such that women



**Figure 1.** Interaction between actor and partner sleep predicting conflict resolution in Study 2. Participants report more conflict resolution when both partners are better rested. Note. The simple slope for partner better sleep is significant ( $b = -.31$ ,  $p < .03$ ), but the simple slope for partner worse sleep is not ( $b = .18$ ,  $p > .10$ ).

reported a smaller ratio of positive to negative affect if their partners had slept poorly,  $B = -.44$ ,  $t(63) = 2.91$ ,  $p < .01$ , whereas men's self-reported affect was not influenced by their partners' sleep,  $t < 1$ . Taken together, the results from Study 2 provide evidence that one partner's poor sleep is associated with the nature and perceived resolution of conflict for both partners, illuminating some of the ways in which poor sleep may promote more harmful conflict.

## General Discussion

Bringing together the sleep literature and the social-psychological research on relationships, the present two studies are the first, to our knowledge, to demonstrate that sleep impacts the degree, nature, and resolution of relationship conflict. Conflict is inevitable in close relationships and can help couples successfully navigate differences of opinion. However, relationships characterized by high levels of conflict can be quite damaging (e.g., Kiecolt-Glaser & Newton, 2001), making it imperative that we uncover factors that lead to harmful conflict. Our findings suggest that one reason why couples may engage in more frequent and severe, and possibly unnecessary, conflict is because at least one of the partners is suffering from poor sleep. In Study 1, poor sleep one night was associated with greater conflict the following day across a 2-week period. In Study 2, poor sleep the previous night was associated with a lower ratio of positive to negative affect (both self-reported and observed), as well as reduced empathic accuracy, for both partners during a conflict conversation. Poor sleep also hindered conflict resolution. Importantly, the present results could not be explained by partners being the source of poor sleep or by differences in relationship satisfaction, stress, anxiety, or depression.

The current research extends the small literature on sleep and relationship quality in several important ways: The previous research has largely focused on the impact of sleep disorders, such as obstructive sleep apnea (for a review, see Troxel et al., 2007). In the current work, we found that the link between sleep and relationship functioning is not confined to those couples who suffer from severe sleep problems. Most notably, in Study 1, participants reported experiencing more conflict in their relationships following nights when they slept worse relative to their *own* average across the 2-week study. In addition, the current research extends previous findings by highlighting the dyadic effects of sleep—both partners experienced a lower ratio of positive to negative affect and reduced empathic accuracy when one partner slept poorly, and conflict was most likely to be resolved by two well-rested partners.

To the best of our knowledge, our research is also the first to link sleep and empathic accuracy during ongoing interactions. Empathic accuracy and emotional expressivity play an important role in conflict and negotiations. Our finding that people are less empathically accurate after a poor night of sleep dovetails with research showing that people make less use of other people's emotional expressions during conflict when their information processing is impaired (Van Kleef, De Dreu, & Manstead, 2004b). In terms of partner effects, the finding that people are less empathically accurate when their partners sleep poorly suggests that sleep may influence people's emotional expression as well as their emotional experience. Perhaps, poor sleep blunts people's facial expressions, making it more difficult to decode their emotions, or it could be that people are less vocal about their feelings when they are tired. Emotional expressions carry important information about people's thoughts, feelings, and behavioral intentions (Keltner & Haidt, 1999; Van Kleef, 2009), which can help people successfully navigate conflict situations (e.g., Pietroni, Van Kleef, De Dreu, & Pagliaro, 2008; Van Kleef et al., 2004a). These present findings can also be applied beyond the realm of conflict, such as to the domains of helping and stereotyping in which empathic accuracy plays an influential role (e.g., Coke, Batson, & McDavis, 1978; Galinsky & Moskowitz, 2000). Given the important roles of empathic accuracy and emotional expressivity in social interactions, research is clearly needed to further explore the link between sleep and the expression and decoding of emotions.

Regarding limitations, both studies employed correlational designs, preventing definitive causal conclusions about the impact of sleep on conflict. We did conduct lagged-day analyses in Study 1 and addressed several alternative explanations, but there may be others. Thus, experimental work is needed to establish the causal effect of sleep on conflict. In addition, we relied on subjective measures of sleep, given that they are strong predictors of psychological outcomes (e.g., Pilcher et al., 1997; Pilcher & Ott, 1998), but future research needs to examine whether objective measures of sleep also reveal a sleep–conflict link and if subjective and objective measures of sleep affect conflict in similar ways.

Although we spend nearly one third of our lives sleeping, often sharing our beds with a relationship partner, the effects of sleep on relationship functioning have received relatively little attention in the sleep community and nearly no attention in the social–psychological domain. The findings from the current research uncover some significant ways in which poor sleep influences relationship conflict for both partners.

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### Notes

1. These data were previously published in an article examining the effects of depressive symptoms on perceived understanding (Gordon, Tuskeviciute, & Chen, 2013), where we report that people who were experiencing more depressive symptoms had partners who were less empathically accurate. In the current research, we control for depressive symptoms when examining the link between sleep and empathic accuracy and find that our effects hold.
2. Although we were primarily interested in the ratio of positive to negative affect, we ran ancillary analyses examining the effects separately for positive and negative affect. For self-reported affect, actor  $B = .14$ ,  $t(102) = 2.54$ ,  $p < .02$ ;  $B = .10$ ,  $t(115) = 1.80$ ,  $p < .08$ , but there was no significant association between either partner's sleep and self-reported positive affect, actor  $B = -.08$ ,  $t(106) = 1.28$ ,  $p < .21$ ; partner  $B = -.10$ ,  $t(114) = 1.58$ ,  $p < .12$ . For observed affect, partner but not actor poor sleep was positively associated with observed negative affect, actor  $B = .09$ ,  $t < 1$ ; partner  $B = .22$ ,  $t(88) = 2.16$ ,  $p < .04$ , and both actor and partner sleep were negatively associated with observed positive affect, actor  $B = -.17$ ,  $t(82) = 1.79$ ,  $p < .08$ ; partner  $B = -.19$ ,  $t(84) = 2.00$ ,  $p < .05$ .
3. In the reported analyses controlling for both partners' depressive symptoms, there was an actor effect of depressive symptoms for self-reported but not observed affect, self-reported  $B = -.46$ ,  $t(111) = 4.82$ ,  $p < .00$ ; observed  $B = -.16$ ,  $t(87) = 1.35$ ,  $p < .18$ , and no significant partner effects ( $B$ s =  $|.07|$ ,  $t$ s  $< 1$ ). In the reported analyses controlling for relationship satisfaction, there was an actor effect of satisfaction for self-reported and observed affect, self-reported  $B = .34$ ,  $t(115) = 3.41$ ,  $p < .001$ ; observed  $B = .33$ ,  $t(100) = 2.96$ ,  $p < .01$ , and a partner effect for self-reported but not observed affect, self-reported  $B = .17$ ,  $t(120) = 1.68$ ,  $p < .10$ ; observed  $B = .10$ ,  $t < 1$ .

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